
# Peer Review

# Maryland Commission on Climate Change Climate Action Plan

**September 2008**

## Introduction

Gov. Martin O'Malley signed Executive Order 01.01.2007.07 in April 2007 establishing the Maryland Commission on Climate Change (MCCC) with the mandate to produce a Climate Action Plan (CAP). MCCC partnered with the Center for Climate Strategies (CCS) to develop recommendations to reduce emissions of greenhouse gases (GHG) in Maryland and to estimate the costs and benefits of their recommendations.

The Beacon Hill Institute has previously reviewed the cost-benefit methodology employed by CCS in four other states: Washington, Colorado, Minnesota, and North Carolina. The Institute found three serious problems with the CCS cost-benefit analyses:

1. CCS failed to quantify benefits in a way that they can be meaningfully compared to costs;
2. When estimating economic impacts, CCS often misinterpreted costs to be benefits; and
3. The estimates of costs left out important factors, causing CCS to understate the true costs of its recommendations.

Unfortunately for Maryland policy makers, these same three problems plague the CAP report, rendering it unsuitable for making any informed policy decisions.

In this brief document, we first summarize the main findings of the CAP study. We then briefly review problems 1 and 2, before providing a more detailed analysis of the third problem, where we examine the individual cost and benefit assumptions made in the programs proposed in the CAP report that project the greatest net cost savings.

## The CAP Plan

The CAP report contains 42 recommended policy actions to reduce GHG emissions. These policy options are classified as falling into five areas:

1) Agriculture, Forestry & Waste;
2) Energy Supply;
3) Residential, Commercial & Industrial;
4) Transportation & Land Use;
5) Cross-Cutting Issues (policies that impact more than one of the above sectors).

In addition to planning the activities of the commission, CCS facilitated and provided technical assistance in the development of the policy recommendations. The CAP report quantifies forecasted emissions reductions for 26 of the 42 recommended policies[1]. They estimate that, if these policies were fully implemented, Maryland's GHG emissions would be 40% to 55% lower by 2020 than they would be if the policies were not implemented. MCCC anticipates that early actions already taken by the state will achieve 60% to 70% of the 2020 GHG emissions reduction goal.

MCCC recommends enacting many of the same policies in Maryland that similar committees have recommended in other states. In fact, BHI found many policy recommendations in the CAP report that are, in fact, "carbon copies" of recommendations found in other states' GHG emission mitigation reports that utilized CCS as a consultant. Part of the problem herein lies with the fact that CCS recommends the same policies for states that have vastly different geographic, economic, climate, demographic and cultural characteristics. These proposals fail to account fully for the differences between the hot southwest and the temperate mid Atlantic regions.

Surprisingly, the CAP report claims that the implementation of these measures would result in net cost savings for the State's economy. The CAP report quantifies costs for 27 of the 42 recommended options; of these, it is claimed that 12 would generate net cost savings per ton GHG reduced. If all options were implemented, the CAP estimates that the state would save approximately $2 billion (in present value terms) between now and 2020.

The CAP report gives the impression that state policy makers can have their cake and eat it too: that Maryland can simultaneously reduce GHG emissions *and* produce net cost savings for the state's economy. Unfortunately, the seriously flawed nature of the report undermines these conclusions.

***Problem 1: CAP fails to quantify benefits in a way that can be meaningfully compared to costs***

A scientifically sound cost-benefit analysis should clearly spell out all of its assumptions, estimate the physical impacts that a particular policy change will have over time, and then estimate the present value, in dollars, of both the benefits and the costs of the physical impacts. On this basis, a study should be able to conclude whether a given policy change is expected to provide benefits in excess of its costs.

The CAP report does not discuss the details of the methodology employed in the net cost (savings) projections of the policy recommendations. In previous state reports where CCS provided technical assistance, the main intended benefit of implementation of climate change mitigation options was reduced GHG emissions. Similar to the other reports, the CAP report fails to estimate the dollar value of the main intended benefit. The authors of the climate action plan for the state of Colorado were explicit about this:

[1] The CAP report also quantifies emissions reductions for subsidiary policies contained within broader policy recommendations. For example, ES-5 contains ES-5a and ES-5b with two separate emissions reductions estimates. The report does not make distinctions between these subsidiary policies and the broader policies when referring to the 42 policy recommendations. For this reason, BHI does not make any distinction leaving forecasted emissions reductions for 26 of the 42 recommendations.

> Regarding GHG benefits, market prices (monetized benefits) are normally taken as good proxies of societal costs and benefits in standard analysis unless there are market imperfections or subsidies that create distortionary effects. Because accurate information on the dollar value of GHG reductions benefits is typically not available, physical benefits are used instead, measured as MMTCO2e (p. D2).[2]

However, without this information, the CAP report is unable to conduct a cost-benefit analysis at all. The goal, reduced GHG emissions, is measured in purely physical terms instead of dollars, which precludes a comparison of the value of reduced GHG emissions to the costs associated with reducing the emissions.

Estimating a dollar value of reduced GHG emissions would require a number of steps. First, a full accounting of both societal costs and benefits from higher emissions would have to be constructed. Then the impact on these costs of the marginal changes in Maryland's emissions would have to be estimated.

The CAP report estimates that Maryland emitted a net total of 97.8 million metric tons (MMt) of carbon dioxide in the year 2005. In this same year, the Energy Information Administration estimated that worldwide global carbon dioxide emissions to be 28,192.7 MMt and U.S. emissions to be 5,981.6 MMt.[3] Accordingly, Maryland accounts for just 1.6% of U.S. emissions and a minuscule 0.35% of worldwide emissions.

The CAP study suggests that its recommendations would result in a 25% reduction in Maryland emissions by 2020 (73.3 vs. 97.8 MMt), which amounts to a net decrease of 0.066% in projected 2020 global emissions of 37,035 MMt.[4] Because Maryland's GHG emissions are so small relative to the rest of the world's emissions, it is quite apparent that no policy adopted by Maryland would have any discernable impact on global climate change and thus no measurable economic benefit.

***Problem 2: When estimating economic impacts, CAP often misinterprets costs to be benefits.***

The CAP report routinely mistakes costs for benefits. Jobs in particular are erroneously viewed as benefits throughout the report. The CAP report claims that implementation of their recommendations could create between 144,000 and 326,000 jobs in clean energy industries for the state of Maryland over the next 20 years. The report claims that such job creation would add $5.7 billion in wages and salaries, increase state and local tax revenues by $973 million and boost state GDP by $16 billion during that time.[5] Unfortunately, the CAP report does not clearly explain how the benefits from job creation in clean energy industries will outweigh the costs associated with job displacement in the industries that will suffer from the implementation of the panel's recommendations.

Additionally, jobs themselves are *not* a benefit; if they were, workers would be paying their employers for the privilege of working, rather than vice versa! It is the value created by performing those jobs that is

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[2] "Colorado Climate Project's Climate Action Panel Cost-Benefit Analysis," http://www.coloradoclimate.org/ewebeditpro/items/O14F13852.pdf [accessed September 9, 2008]. See D2.
[3] U.S. Department of Energy, Energy Information Administration, Environment: energy related emissions data and environmental analysis; Internet; available at http://www.eia.doe.gov/environment.html; accessed September 16, 2008.
[4] Ibid
[5] "Comprehensive Greenhouse Gas and Carbon Footprint Reduction Strategy", http://www.mde.state.md.us/assets/document/Air/ClimateChange/Chapter4.pdf [accessed September 16, 2008]. See p. 13.

the benefit, while doing the job is the cost an individual must pay to obtain a benefit. As noted above, the CAP fails to measure, in dollars, the benefit that any of these policies, including those with new green jobs, would create.

***Problem 3: The estimates of costs leave out important factors, causing CAP to understate the true costs of its recommendations***

Although the CAP report does not estimate the monetary value of benefits (reduced GHG emissions), it does attempt to quantify the monetary costs of 26 of their policy recommendations. As indicated above, the report claims that there would actually be net savings, not net costs, if its recommendations were implemented.

This finding – that mitigating GHG emissions amounts to a free lunch – does not hold up under scrutiny, and is an artifact of the CAP report's unrealistic assumptions and incomplete listing of costs. To highlight these shortcomings, we now examine in more detail some of the policies that, according to the CAP report, would generate the greatest net cost savings (3 of them in excess of $1 billion) while also reducing GHG emissions. The four policies are listed in Table 1, next to the net cost savings that CAP claims would result if Maryland implements the policies.

**Table 1. CAP Estimates of New Savings Due to Implementation of Selected Greenhouse Gas Emission Mitigation Measures**

| | Program title | Net Cost Savings to MD by 2020 ($ millions) |
|---|---|---|
| AFW-9 | Waste Management Through Source Reduction and Advanced Recycling | 1,118 |
| RCI-2 | Expand Demand Side Management & Energy Efficiency Programs | 1,898 |
| RCI-10 | Energy Efficiency Resource Standard | 3,670 |
| TLU-3 | Transit | *Large net savings* |

*Source: CAP report*

*AFW-9 Waste Management Through Source Reduction and Advanced Recycling*

This proposal would require or strongly encourage all government agencies to purchase goods that are made from reused or recycled materials. Additionally, the proposal would require or encourage all government agencies to purchase goods and services from producers that practice a "cradle to cradle" policy where they take responsibility for reducing waste and recycling their products throughout the lifetime of the product. The policy aims to reduce the waste stream by 35% and increase the recycling stream by 30% in the year 2020. Identifying incentives that encourage the use of recycled material, discourage single-use products, and reduce the amount of raw materials used in production processes are the main mechanisms for implementation of this policy.

The proposal also concentrates on providing incentives for the improvement of the quality and longevity of products from manufacturers through the elimination of subsidies that encourage single-use waste. These incentives will provide the majority of the cost savings that result from source reduction strategies. Reduced hauling and sorting costs at landfills and recycling facilities due to lower levels of source waste account for a large portion of the net cost savings associated with this policy.

However, the ultimate question remains as to whether the implementation of these policies will produce a net cost or net benefit for the state of Maryland. If there are large net gains to be had from the reduction of source waste and the increased recycling of raw materials, surely firms would have an incentive to

implement these procedures and reap the benefits. The use of copper and aluminum are clear examples of where the benefits of recycling outweigh the costs and we observe that firms do indeed practice recycling in these cases.

Counting reduced sorting costs at plants is disingenuous. Sorting still must take place. When decentralized firms or households sort their own waste that still involves a cost, just one not explicitly paid by governments. If there are economies of scale in sorting then it would be cheaper to sort at a central plant and these cost savings estimates turn into net costs.

The conclusion then is that this policy will not deliver the huge cost savings that have been promised. In fact, this policy will impose net costs on manufacturers in the form of increased production costs and raw material costs. The claim of $1.118 billion in net cost savings is dubious due to the fact that firms already have an incentive to seek out and implement any processes that result in net costs savings.

*RCI-2 Expanded Energy Efficiency and Demand Side Management*

This proposal focuses on achieving the goals of reduced overall energy consumption and a reduction in peak load demand for energy through increased investment in electricity and natural gas demand side management (DSM) programs. The CAP report estimates that the policy will create more than $1.898 billion in net savings for the Maryland economy. The net savings originate from energy efficiency programs funded with the revenue from a Public Benefits Fund and reduced spending on energy resulting from the higher prices. There are two major problems with the analysis of this policy.

First, this policy encounters the same problem described for option AFW-9. If the DSM programs provide net savings to the producers implementing them, then there is no need to use tax revenue from this program to fund them. These programs would have been implemented voluntarily in order to enjoy the suggested net benefits.

Second, the CAP analysis fails to quantify the value of what would have been produced or consumed with the increased energy use that the DSM programs are designed to discourage. The sacrificed value resulting from the increased energy prices constitutes a major cost that the CAP analysis completely ignores. When energy uses creates benefits in excess of its cost the energy should be used. By intentionally increasing the prices, this policy drives a wedge between the true cost of the energy and the price the buyer has to pay which leads to inefficient use (i.e. net costs).

To illustrate, if electricity can be produced for $200 and a consumer values what that electricity will provide at $250, there is a net gain of $50 for the Maryland economy if the person consumes the electricity. If this policy raises the price to $260 while the cost remains at $200, the person will choose not to consume it and Maryland will be $50 poorer as a result. The CAP report completely ignores these losses and instead actually counts forgone energy consumption as a benefit! In this example, instead of a $50 loss, they would incorrectly estimate a $200 gain to the economy!

The CAP report essentially counts dollars not spent on a valuable service as a benefit. Pushing the model to its logical conclusion, Maryland could maximize the net benefits from this policy by setting surcharges directed to the Public Benefits Fund so high starting with the very first megawatt of electricity consumed to the effect that nobody purchases any electricity. Then Maryland could experience a net economic gain equal to the entire amount the citizens of the state currently spend on electricity! There are obvious costs to consuming no electricity, but the CAP model does not account for any of these costs.

In analyzing this policy the CAP not only overestimated savings, but they actually estimated a cost as a net benefit.

*RCI-10 Energy Efficiency Resource Standard*

This policy is designed as a market-based mechanism that will require more efficient use of electricity and natural gas through the imposition of energy savings targets for utilities by the state public utility commissions or other regulatory bodies. More specifically, this proposal would establish mandatory electricity and natural gas demand reduction targets of 0.5% starting in 2009. These demand reduction targets will increase gradually to 2.0% for the years 2014-2015. All of the projected net cost savings in the amount of $3.67 billion associated with this policy come from energy savings due to reduced production and consumption.

This policy encounters the same fundamental problem as the previous policies: if the private net benefits of reduced energy consumption are so large, why are individuals and firms not already taking advantage of this opportunity. Again, this policy omits an estimate of the opportunity cost in the form of sacrificed value associated with increased energy use. Leaving out this massive cost associated with the implementation of an Energy Efficiency Resource Standard seriously mitigates against the huge projected net economic benefits. In fact, it is more likely that this policy will impose net costs on the state economy.

*TLU-3 Transit*

This policy option is designed to induce passengers to choose transportation options that would emit less greenhouse gas. Implementation is to be achieved by a multi-modal program that would:

- Improve transit service (frequency, convenience, quality);
- Expand transit infrastructure (rail, bus, bus rapid transit);
- Focus new development on transit-served corridors;
- Expand transit marketing and promotion;
- Expand transportation system management and design; and
- Improve bike and pedestrian infrastructure.

MCCC recommends funding the initiative with the revenues collected from the carbon fuel tax proposed in TLU-9. The CAP report estimates that these revenues can be used to increase transit infrastructure funding $2.678 billion per year. Depending on the aggressiveness of the implementation of the transit options above, the state of Maryland can expect anywhere from modest to substantial net cost savings.

In order to arrive at this astonishing and implausible result, the MCCC reports on a 1999 study that found, "for every $10 million invested [in transit], over $15 million is saved in transportation costs to both highway and transit users. These costs include operating costs, fuel costs, and congestion costs."[6] The supposed net benefits result from reductions in vehicle miles traveled arising from improvements in the public transit infrastructure.

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[6] Maryland Commission on Climate Change, *Maryland Climate Action Plan*, http://www.mde.state.md.us/assets/document/Air/ClimateChange/Appendix_D_Mitigation.pdf [accessed September 16, 2008] See appendix D, p. 249. Also see Cambridge Systematics, Inc. 1999. Public transportation and the nation's economy: a quantitative analysis of public transportation's economic impact. Available at: http://www.apta.com/research/info/online/documents/vary.pdf

Even if we take the 50 percent return on investment as a given, there are a number of problems with extrapolating that result to the entire transit infrastructure of Maryland. ***The first problem is the scale***. Is it accurate to assume that the finding, a 50 percent return on a $10 million dollar investment, can be extrapolated, implying that you can get a 50 percent return on a $2.678 billion dollar investment for each year until 2020? It is far more plausible that such investments will face diminishing marginal returns, which is why MCCC is unjustified in assuming a constant 50 percent return on investment.

The problem of scale leads to a ***second problem, that of complementarity***. Absolutely no effort is made to analyze the existing infrastructure in Maryland and how this increased investment would augment it. The 50 percent return is simply assumed. What if the state had already invested $1 trillion dollars in transit infrastructure? Would the increased infrastructure spending still result in a 50 percent return? What if Maryland had no such infrastructure? The MCCC report simply does not address the question, assuming it away:

> The cost-effectiveness of investments in transit and transit promotion will vary depending on how those investments are made… a given investment in transit and/or transit promotion may or not [sic] produce net benefits, so while this process needs to make general policy recommendations, it will remain the responsibility of the state and its constituents to maximize the cost-effectiveness of investments made. For the purposes of this analysis, we ask whether those types of investments are *likely* to produces net costs or net savings.[7]

In other words, the report does not attempt to see if the returns it assumes from elsewhere could be achieved, given the existing transit infrastructure in Maryland.

To make matters worse, the MCCC report faces a third problem: ***It does not correctly measure the opportunity cost*** of diverting current personal income through the imposition of a carbon fuel tax to the proposed activities. It is simply assumed that the costs are given by the dollar value of these funds. But these dollars would have gone to satisfying some other desire if they were not dedicated to this proposal, where they could presumably have generated a positive return for individuals and firms. Thus, the true cost of funds used for the activities recommended by MCCC is the value of what the same investment could have produced elsewhere.

There is one other problem, of a more conceptual nature. If the projects proposed by the MCCC report are really expected to generate a 50 percent return – remarkable by any standard – why does the report recommend dedicating only $2.678 billion to the transit proposal? Why not impose a higher carbon fuels tax in addition to dedicating the entire Department of Transportation budget to multi-modal projects? A plausible answer is that the MCCC researchers do not themselves believe that they could achieve a 50 percent return on additional investment in their proposals.

### *Conclusion*

The CAP report provides zero guidance to policy makers regarding the desirability of policies aimed at reducing GHG emissions. It fails to perform the most basic task of any cost-benefit analysis – quantifying both the costs and benefits in monetary terms so that they can be directly compared. The analysis mistakes costs for benefits. Astonishingly, the report posits net economic savings from policies intended to reduce GHG emissions *without* counting the value of those reduced emissions.

[7] Ibid. p. 248

In this peer review we have briefly examined the cost-benefit assumptions for the four most important proposals in the CAP report. In each case we have found the analysis to be seriously flawed. We can find no sound scientific basis for the claim that implementation of the recommended polices will produce a net benefit of more than $6 billion (in present value terms). The cost savings estimates provided by the CAP are not just wildly optimistic; they are the product of a purely fictitious analysis. Yet these programs would generate the majority of the overall net cost savings that would result from the implementation of the 42 proposals that they suggest.

For policymakers, the CAP report offers no worthwhile guidance. The report fails to quantify the monetary benefits of reduced GHG emissions rendering its cost savings estimates implausible if not downright unbelievable. The faulty analysis contained in the CAP report leaves policymakers with no basis on which to judge the merits of the CAP report's recommendations for action on the mitigation of GHG emissions.